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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,204	02/28/2002	Takako Suzuki	Q67844	6177

7590 05/18/2005

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EXAMINER	
CHU, JOHN S Y	
ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,204	SUZUKI ET AL.	
	Examiner	Art Unit	
	John S. Chu	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office action is in response to the arguments filed February 15, 2005.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 17-20 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure, which is not enabling. The quinonediazide methyl gallate compound (b2), which is present in all the examples are required to provide the improved resist pattern having a good shape and is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

This rejection is given based on MPEP 2172.01, which states that:
"A claim which omits matter disclosed to be essential to the invention as described in the specification or in other statements of record may be rejected under 35 U.S.C. 112, first paragraph, as not enabling. In re Mayhew, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). See also MPEP § 2164.08(c). Such essential matter may include missing elements, steps or necessary structural cooperative relationships of elements described by the applicant(s) as necessary to practice the invention."

The examiner maintains his position wherein the quinonediazide methyl gallate is seen as essential to the composition in order to practice of the invention as intended. Applicants argue that the compound is broadly disclosed on page 4, line 10 to page 5, line 6 which rebuts the fact that the compound is critical. In addition Applicant argues that the Examiner has

"misinterpreted" the requirements of 35 U.S.C. 112, first and second paragraphs, wherein applicants state that the features of that are seen as a "preferred" ingredient are not considered "critical" and would not result in a rejection under enablement.

The Examiner notes that in each of the examples set forth by applicant the quinonediazide methyl gallate compound is present appearing to be critical to the invention in order to give the recited improved property characteristics for resist patterns not more than half a micron have a good shape with minimal dimensional changes, (page 4, lines 1-6). The term "critical" is seen to be the more appropriate descriptive term for the quinonediacide compounds in the composition because of it required presence in the composition with the recited quinonediazide compounds of formula I. The term "preferred" would to the examiner indicate that compositions which lack the methyl gallate quinonediazide compounds would yield the same results as disclosed. However, the examples do not imply that scenario. The rejection is repeated.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the quinonediazide methyl gallate compound which is present in all the examples and is required to provide the improved resist pattern having a good shape, see Table 2 on page 30 of the working examples wherein ingredient b2 (defined as a

triester of a methyl gallate on page 26, line 23) is in every composition wherein the improved results are obtained.

The arguments by applicant's attorney has been carefully considered, however the rejection is maintained and repeated, because contrary to applicant's attorney's argument that the quinonediazide methyl gallate is not required, it is repeated that the novel properties displayed in the examples appear to require the presence of a quinonediazide methyl gallate in order to give the disclosed improvement recited by applicant as found on page 4 (for forming a resist pattern not more than half a micron having a good dimensional shape).

Because the quinonediazide is seen to be a required element based on the specification, applicants are urged to include the limitations in the claims to complete the claimed composition.

This rejection is given based on MPEP § 2171.01, which states:

> "In addition, a claim which fails to interrelate essential elements of the invention as defined by applicant(s) in the specification may be rejected under 35 U.S.C. 112, second paragraph, for failure to point out and distinctly claim the invention. See In re Venezia, 530 F.2d 956, 189 USPQ 149 (CCPA 1976); In re Collier, 397 F.2d 1003, 158 USPQ 266 (CCPA 1968).

The rejection is repeated as state in the previous paragraph wherein the quinonediazide methyl gallate compounds are seen as critical as implied by the examples in the application.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

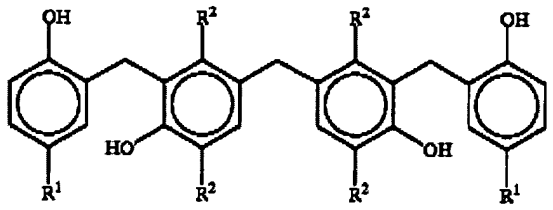
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over KAWATA et al in view of MOMOTA et al further in view of UETANI et al '657.

The claimed invention is drawn to a positive photoresist composition comprising

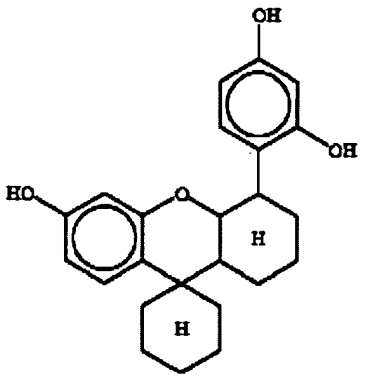
(A) an alkali-soluble resin

(B) a photosensitizer containing a quinonediazide ester of a compound of the following formula (I)



,and

(C) at least one compound of phenol group-containing compounds having structural formula (C4) and having an elution time in the range from 6 to 30 minutes in high performance liquid chromatography, said high performance liquid chromatography being conducted under the following conditions: eluent: a mixture solvent of water: tetrahydrofuran:methanol=40:24:36 (by weight): column 4.6mm(diameter x 150 mm (length) containing 5μm silica gel as a filler (carbon content being about 15 %); column temperature: 45.0^0 C; and supply rate of eluent: 0.7.00 ml/min.



(c4)

KAWATA ET AL discloses a positive photosensitive composition comprising an alkali-soluble resin, a quinonediazide ester and a polyphenol additive. Applicants are directed to column 7 and 8, compound (b-7) which meets the claimed compound of formula (I) lacking only a methyl or ethyl group in the two central aromatic groups. KAWATA ET AL teaches a hydrogen substituted in the two central aromatic groups. As for claimed ingredient (c) in the application, KAWATA ET AL discloses a phenol compound found in column 24, line 25 defined as (C49) which would meet the elution properties recited if process in the manner claimed. Further compound as (C-64) in column 36, line 45 – 60 defined) also meets the claimed elution properties. The examiner bases this conclusion on the recited compounds defined as (c5) and (c6) found on pages 7 and 8, wherein these compounds would meet the claimed elution properties.

MOMOTA ET AL teaches a photoresist composition comprising an alkali-soluble resin , a quinonediazide compound and a polyphenol additive. MOMOTA ET AL is cited to disclose that the use of alkyl groups or hydrogen groups in quinonediazide esters of polyphenol compounds is interchangeable and the skilled artisan would reasonably expect same or similar results, see the compounds of (I-1) and (I-3) found in columns 3/4, lines 60-68 and columns 5/6, lines 10-15, respectively. The compounds show a phenol compound to be esterified with

quinonediazide to have hydrogen groups and methyl groups in the two central aromatic groups with relatively the same results with respect to resolution, sensitivity and film thickness loss, see Table 1 and 2, examples 5 and 7 in column 23, lines 1-68.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresist compositions to use an alkyl substituted polyphenol photosensitive compound disclosed in MOMOTA ET AL in the photoresist composition of KAWATA ET AL in place of the (B-7) as a photosensitive ingredient with the reasonable expectation of same or similar results as disclosed in KAWATA ET AL for excellent sensitivity, resolution and film thickness loss.

UETANI et al '657 discloses a positive photoresist composition comprising an alkali-soluble resin, a quinonediazide compound and a phenol compound additive, as seen in column 4, line 11-25. The additive phenolic compound provides for improved sensitivity, heat resistance and film thickness retention and are known in the art to be functionally equivalent to the polyphenolic compounds in KAWATA et a.

It would have been *prima facie* obvious to one of ordinary skill in the art of positive photoresist composition to use known phenolic additives as disclosed in UETANI et al in place of the additive phenolic compounds in KAWATA et al and reasonably same or similar results in improved sensitivities, improved developing properties and excellent pattern profile formation.

The arguments by applicant have been carefully considered in addition with respect to the comparative examples found in the specification. In the analysis by the examiner, it is noted that the comparative examples fail to be of proper scope, wherein a comparison to the closest prior art reference, used in the *prima facie* case of obviousness above, is missing. The Comparative Examples 2-4 demonstrate a composition missing a phenolic additive compound which lacks the

disclosed improved resist pattern having a good dimensional shape, however the prior art composition to KAWATA et al disclose a photosensitizer differing only by the recited alkyl groups defined as R_2. KAWATA et al disclose hydrogen groups at the R_2 location in his photosensitizer and a phenolic compound differing from the claimed phenol compound defined as (C4). Evidence demonstrating that the prior art composition lacks the same properties as disclosed, when using the prior art photosensitizer and phenolic additive may be helpful in order to over the *prima facie* case of obviousness.

The applicants argue against a *prima facie* case of obviousness, while the examiner believes one is present, wherein the 35 U.S.C. 103 rejection can be overcome by secondary considerations, i.e. declaration under rule 1.132 showing unexpectedly improved results over the closes prior art. Accordingly, the rejection is repeated.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

The fax phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application lnformation Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John S. Chu
Primary Examiner, Group 1700

J.Chu
May 13, 2005